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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>C07K 7/50, A61K 38/12</b>		<b>A3</b>	(11) International Publication Number: <b>WO 00/11023</b>
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(21) International Application Number: <b>PCT/US99/18908</b>		William, Wilson, Jr. [US/US]; 4000 Saratoga Drive, Bloomington, IN 47408 (US).	
(22) International Filing Date: <b>18 August 1999 (18.08.99)</b>		(74) Agents: LEHNHARDT, Susan, K. et al.; Morrison & Foerster LLP, 1290 Avenue of the Americas, New York, NY 10104-0012 (US).	
(30) Priority Data: <b>60/097,228                      20 August 1998 (20.08.98)                      US</b>		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
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(54) Title: <b>RING MODIFIED CYCLIC PEPTIDE ANALOGS</b>			
(57) Abstract <p>A method for modifying the cyclic peptide ring system of Echinocandin-type compounds to produce new analogs having antifungal activity is provided. The inventive process comprises opening the cyclic peptide ring, cleaving the terminal ornithine unit, inserting at least one new amino acid or other synthetic unit and closing the ring to produce a new cyclic peptide ring structure. The process allows one to incorporate features such as water-solubility into the cyclic peptide ring nucleus, sites for further modification, increase or decrease the number of amino acid or peptide units within the ring nucleus, and increase or decrease the total number of members within the ring. The invention further provides novel Echinocandin type compounds and their use as antifungal or anti-parasitic agents.</p>			

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 99/18908

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 C07K/50 A61K38/12		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 C07K A61K		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	NATSUKO KUROKAWA ET AL: "SYNTHETIC STUDIES ON ANTIFUNGAL CYCLIC PEPTIDES, ECHINOCANDINS. STEREOSELECTIVE TOTAL SYNTHESIS OF ECHINOCANDIN D VIA A NOVAL PEPTIDE COUPLING" TETRAHEDRON, NL, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, vol. 49, no. 28, page 6195-7022 XP000571478 ISSN: 0040-4020 cited in the application the whole document --- -/--	1-11
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "A" document member of the same patent family		
Date of the actual completion of the international search  23 December 1999		Date of mailing of the international search report  12 04 2000
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  GROENENDIJK, M

# INTERNATIONAL SEARCH REPORT

Inten.      nal Application No  
PCT/US 99/18908

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HENSENS E.A.: "Pneumocandins from Zalerion arboricola" JOURNAL OF ANTIBIOTICS., vol. 45, no. 12, XP002126647 JAPAN ANTIBIOTICS RESEARCH ASSOCIATION. TOKYO., JP ISSN: 0021-8820 See especially pages 180-1882 ---</p>	1-11
A	<p>JAMISON E.A.: "The synthesis and antifungal activity of nitrogen containing hemiaminal ethers of LY303366" JOURNAL OF ANTIBIOTICS., vol. 51, no. 2, February 1998 (1998-02), pages 239-242, XP002126600 JAPAN ANTIBIOTICS RESEARCH ASSOCIATION. TOKYO., JP ISSN: 0021-8820 See especially page 239, introduction ---</p>	1-11
A	<p>ZAMBIAS E.A.: "Preparation and structure-activity ewlationships of simplified analogues of the antifungal agent cilofungin: a total synthesis approach" JOURNAL OF MEDICINAL CHEMISTRY, vol. 35, no. 15, 1992, pages 2843-2855, XP002126648 WASHINGTON US cited in the application the whole document -----</p>	1-11

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/ 18908

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
**Remark: Although claims 17-20 encompass or are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.**
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-11

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

**1. Claims: 1-11**

Process for modifying a cyclic peptide ring nucleus.

**2. Claims: 12-20**

Compounds as defined in claim 12 and their use.